

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-018139**Date Inspected:** 11-Nov-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Field Splice E6/E7
- B). Field Splice E7/E8
- C). Field Splice W6/W7
- D). Ventilation Access Hole-Insert Plate

A). Field Splice E6/E7

The QAI observed the welder, Xiao Jian Wan ID-9677, perform the CJP groove welding on the "B" face of the longitudinal stiffener field splice identified as WN: 6E-7E-A-LS-6. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector John Pagliero as a reference. The amperage was recorded as 123 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified. The welding on the "B" face of the weld joint was completed during this shift.

Later in the shift the QAI observed the QC inspector performing the fit-up inspection of the longitudinal stiffener identified as WN: 6E-7E-A-LS-4. No issues were noted by the QC inspector and the QAI concurs with the QC assessment. At the conclusion of the QC inspection the welder Xiao Jian Wan commence the CJP welding and of the groove joint utilizing the same WPS as noted during the welding of the weld joint identified as WN:

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## WELDING INSPECTION REPORT

( Continued Page 2 of 4 )

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6E-7E-A-LS-6.

The QAI also observed the welder, Hua Qiang Hwang ID-2930, performed the CJP groove welding on the "A" face of the longitudinal stiffener field splice identified as WN: 6E-7E-A-LS1. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1012-3, Rev.0 and was also utilized by the QC inspector John Pagliero as a reference. The amperage was recorded as 122 amps and the minimum preheat of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified.

The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane and the groove approximately vertical. The welder utilized a slag hammer, pneumatic air gun with an attached chisel and a wire wheel attached to a 4" high cycle grinder to remove slag after deposit of each fill pass. The electrodes were stored in electrically heated, thermostatically controlled oven after removal from sealed containers. The exposure limits of the electrodes identified as E9018-H4R and the minimum storage oven temperature of 250 degrees Celsius appeared to be in compliance with the contract documents. At the time of the observation no issues were noted by the QAI. The welding of the CJP splices was completed during this shift.

### B). Field Splice E7/E8

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) E7-E8-C2. The Complete Joint Penetration (CJP) welding was performed by welding personnel Song Tao Huang, ID-3794 utilizing the WPS ABF-D15-3040B, Rev. 1. The WPS was also used by the QC inspector William Sherwood as a reference to monitor the welding and to verify the DC welding parameters which were noted and recorded by the QC as follows: 245 amps, 23.5 volts and 252 mm/m. The welding was performed in vertical position (3G) at approximate incline of 22 degrees. The QC inspector also verified the minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later during the shift the QAI observed, at random intervals, the QC inspector monitoring the in process welding, the surface temperatures and verifying the welding parameters. The CJP welding was not complete during this shift.

### C). Field Splice W6/W7

Later in the shift, the QAI observed the Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 6W-7W-D1 and D2. The welding was performed by the welding operators Rory Hogan ID-3186 and Jeremy Dolman ID-5042 utilizing the WPS ABF-WPS-D15-3042-A Rev. 0. The WPS was also used by the QC inspector William Sherwood as a reference to monitor the welding and to verify the welding parameters which were observed as follows: 260 amps, 24.4 volts and a travel speed measured as 185mm. The QC inspector also verified the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead (4G) position with the work positioned at approximately horizontal plane and the weld metal deposited from the underside. The CJP welding of the "B" face of the joint was not completed during this shift.

### D). Ventilation Access Hole-Insert Plate PP29.5

The QAI observed the Shielded Metal Arc Welding (SMAW) of the ventilation access hole insert plate identified

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## WELDING INSPECTION REPORT

( Continued Page 3 of 4 )

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as Weld Number (WN): 5E-PP29.5-E2-S on the "A" deck of the Orthotropic Box Girder (OBG) E5. The CJP welding was performed by Jin Pei Wang ID-7299 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-1010, Rev. 1. The WPS was also utilized by the QC inspector John Pagliero as a reference to monitor the welding and to verify the Direct Current Electrode Positive (DCEP) welding parameters which was recorded as 135 amps by the QC inspector. The 3.2 mm electrode was utilized with the welding performed in the overhead (4G) position with the work positioned at an approximate horizontal plane and the weld metal deposited from the underside. . The groove joint appeared to comply with the AWS joint designation identified as B-U4a. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector.

Later in the shift the QAI observed the welder, Jin Pei Wang ID-7299 , perform the CJP groove welding on the longitudinal stiffener field splice identified as WN: 5E-PP29.5-E2-TS. The welder utilized the SMAW process as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1010, Rev.1 and was also utilized by the QC inspector John Pagliero as a reference. The amperage was recorded as 124 amps and the minimum preheat of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius was verified. The QAI also observed the QC inspector perform the fit-up inspection of the stiffener plate prior to welding and no issues were observed by the QAI.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs below illustrate the work observed during this scheduled shift.



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## WELDING INSPECTION REPORT

( Continued Page 4 of 4 )

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### Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Reyes,Danny	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell,Bill	QA Reviewer

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